



PAT McCrory
Governor

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Secretary

January 8, 2015

To: Joint Legislative Transportation Oversight Committee

Subject: H 232 Bicycle Safety Laws Study Report

On June 2, 2015, Governor McCrory signed House Bill 232 as passed by the North Carolina General Assembly requiring NCDOT to study bicycle safety laws. The legislation required NCDOT to establish a working group representing several industries and interests. The working group and NCDOT were tasked with evaluating existing traffic laws for potential revisions to improve motorist and cyclist safety on North Carolina roadways.

During legislative committee debate pertaining to HB 232, legislators cited concern for bicyclist safety as well as consideration for motorist travel and access. HB 232 requires NCDOT to study issues related to passing a bicycle in no passing zones, bicycling one or more abreast, and identification carry for bicyclists. The working group also identified other issues for study such as bicyclist visibility, informal group cycling practices, bicycle events requiring permits, and vulnerable user protections. Discussion frequently centered on group bicycle rides along two lane, undivided rural roadways. The working group met four times between August and November 2015.

HB 232 requires NCDOT to submit a report containing related recommendations to the Joint Legislative Transportation Oversight Committee. A draft report was submitted to the H 232 working group on December 21, 2015. NCDOT received comments from the public (see addendum to the technical appendices). This report represents the final recommendations of NCDOT for each issue and includes information about the actions and discussions of the working group.

In addition to several grammatical and technical corrections, the final report included content changes to the draft report. The changes clarify several NCDOT draft recommendations and/or intent statements. These changes and explanation are summarized below per issue:

Visibility (clothing or other reflective gear) and lighting requirements

The draft NCDOT recommendation called for a rear lamp or bright clothing be visible 200 feet to the rear. The final recommendation calls for 300 feet of visibility to the rear, in keeping with the existing visibility statute for front head lamps on bicycles.

Operating position in roadway

The final report clarifies the NCDOT recommendation to allow cyclists to use the right half and center of the right-hand travel lane when riding single file or individually along roadways with speed limits posted over 35 miles per hour. The list of exceptions to this recommendation is also expanded to include additional safety hazards. The final report



clarifies that the recommendation would not require cyclists to ride single file, and would allow cyclists to use the full lane on higher speed roadways in order to avoid unsafe roadway conditions. These changes reflect widely accepted roadway design guidelines.

Informal group rides on rural roadways

The NCDOT recommendation in the draft report discussed enabling legislation for local governments to register large informal group rides. The final report is amended to recommend that an agency (local or state) issue a permit to a large group of cyclists per the bicycle racing law (§ 20.171.2). The recommendation is clarified to only apply to a large group of cyclists travelling on roadways with posted speed limits over 35 miles per hour, when riding in formation for the duration of a trip. The report also clarifies that the number “30” is a starting point for a discussion about when the size of a group of bicyclists warrants a formal road event permit. Cyclists riding in smaller groups would not be subject to the recommendation. The report recognizes the need for more data and discussion about informal bicycle group riding. The changes also reflect existing permit procedures available to bicycle group ride organizers.

NCDOT respectfully submits this report for your consideration. For further information, please contact Lauren Blackburn, NCDOT Bicycle and Pedestrian Division Director (919-707-2601 or lablackburn2@ncdot.gov) or Kevin Lacy, NCDOT State Traffic Engineer (919-773-2800 or jlacy@ncdot.gov).

H 232 Bicycle Safety Laws Study Report

Introduction

In North Carolina, an average of 19 bicyclists are killed and 664 are hit in crashes on roadways annually. Bicycle crashes are predominantly in urban areas, while fatal crashes occur more often in rural areas. Many factors contribute toward a crash event and its severity, such as weather conditions, traffic speeds, driver distraction, and cycling behaviors.

NCDOT and other state agencies have developed plans and strategies to reduce bicycle crashes. The 2015 North Carolina Strategic Highway Safety Plan includes bicycle and pedestrian safety as emphasis areas. Key strategies include safety education programs focusing on visibility and awareness, enforcing traffic laws, and encouraging statewide participation in the Watch for Me NC campaign (www.watchformenc.org). Additionally, the North Carolina Executive Committee for Highway Safety recently adopted a goal for Vision Zero – aiming to eliminate all traffic related fatalities, including bicycle fatalities. The Strategic Highway Safety Plan can be found at www.ncshsp.org

Improvements to the roadway system are critical to improving safety for cyclists and motorists. Wide shoulders along busy, narrow roadways provide space for cyclists to pull over or allow for cars to pass. Other accommodations, such as bicycle lanes and signage also help direct bicyclists and warn motorists of likely cycling traffic. However, limited right of way along rural roads, funding availability, and sheer size of the NC roadway system often present challenges to building more of these accommodations. For more information about bicycling infrastructure please visit www.walkbikenc.com

Finally, changes to state traffic laws may also help improve safety for cyclists while allowing for predictable interaction between cyclist and motor vehicle traffic. The H 232 working group and NCDOT discussed existing statutes that law enforcement often find unclear, such as riding abreast and passing laws. The working group considered crash data and traffic laws in other states when discussing other statutory issues such as rear lighting, identification carry and distracted bicycling. The working group also discussed instances when group rides have been reported to cause significant traffic delay on rural roads.

The H 232 working group included the following industry or agency representatives, per the specifications of the legislation:

- Master Trooper Christopher Knox – State Highway Patrol (law enforcement representative)
- Wes Dickson – Owner of Sycamore Cycles in Brevard (bicycle industry representative)
- Fred Burt – Farmer in Fuquay-Varina (agriculture industry representative)
- Crystal Collins – NC Trucking Association (trucking industry representative)
- Chris O’Keefe – Director of Development Services, New Hanover County (county government representative)
- Jim Westmoreland – Greensboro City Manager (municipal government representative)
- James Gallagher – UNC Highway Safety Research Center staff (UNC HSRC representative)
- Kevin Lacy – NCDOT State Traffic Engineer (NCDOT representative)
- Lauren Blackburn – NCDOT Bicycle and Pedestrian Division Director (NCDOT representative)

H 232 further specified that the working group would select a chair and up to three additional working group members considering operator and geographic perspectives. The work group recommended the following three additional members during their August 7 meeting:

- Steven Goodridge – member of Bike Walk NC, statewide bicycle advocacy organization
- Chuck Hobgood – President of North Carolina Amateur Sports
- Sergeant Michael Montayne – City of Greenville Police Department

The working group elected Jim Westmoreland to chair the meetings. Mr. Westmoreland and the working group opted to develop formal recommendations by majority vote, and the meeting minutes further reflect dissenting opinions or interests. Where no recommendation could be developed by a majority of the working group, the working group made note of ideas and opinions expressed per the issue. NCDOT retained the services of Garold Smith, a facilitator with Simpson Engineering, to take meeting notes and assist with meeting facilitation.

Meetings were held on August 7, September 11, October 6, and November 18 at various NCDOT venues. Members of the public were permitted to attend the meetings but were not provided opportunity to comment or speak during meetings. NCDOT posted the final report to the website, and the public was allowed to email comments. Those comments are included in the appendices of this report.

The working group identified a total of twelve issues for discussion, including the three specified by H 232:

1. How faster-moving vehicles may safely overtake bicycles on roadways where sight distance may be inhibited (specified by House Bill 232);
2. Whether bicyclists on a roadway should be required to ride single file or allowed to ride two or more abreast (specified by House Bill 232);
3. Whether bicyclists should be required to carry a form of identification (specified by House Bill 232);
4. Visibility (clothing or other reflective gear) and lighting requirements;
5. Options for hand signals for turning;
6. 2-feet or other passing distance requirements;
7. Operating position in roadway;
8. Informal group rides on rural roadways;
9. Use of headphones or texting while cycling;
10. Aggressive driving, harassment, and distracted driving laws;
11. Vulnerable road user protection; and
12. Formal group event permitting and regulations.

The following report presents the following materials to document the working group activities and NCDOT recommendations per H 232:

- H 232 Text as enacted June 2015
- Summary of working group actions and NCDOT recommendations
- Draft Resolution affirming existing laws and best practices
- Report appendices including meeting agendas, meeting minutes, meeting handouts, and presentation slides

Email comments received from the public, following release of this report, will be made available as an addendum to the appendices.

**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2015**

**SESSION LAW 2015-45
HOUSE BILL 232**

AN ACT TO DIRECT THE DEPARTMENT OF TRANSPORTATION TO STUDY THE BICYCLE SAFETY LAWS IN THIS STATE AND MAKE RECOMMENDATIONS AS TO HOW THE LAWS MAY BE REVISED TO BETTER ENSURE THE SAFETY OF BICYCLISTS AND MOTORISTS ON THE ROADWAYS.

The General Assembly of North Carolina enacts:

SECTION 1. Study. – The Department of Transportation shall study the bicycle safety laws in this State. The study shall focus on what statutory revisions, if any, are needed to better ensure the safety of bicyclists and motorists. In doing so, the Department shall consider at least all of the following:

- (1) How faster-moving vehicles may safely overtake bicycles on roadways where sight distance may be inhibited.
- (2) Whether bicyclists on a roadway should be required to ride single file or allowed to ride two or more abreast.
- (3) Whether bicyclists should be required to carry a form of identification.
- (4) Any other issues determined relevant by the Department.

SECTION 2. Working Group. – In conducting the study required by this act, the Department shall convene a working group of interested parties knowledgeable and interested in the bicycle safety laws of this State. The working group shall include all of the following:

- (1) A law enforcement officer.
- (2) A representative from the bicycling industry.
- (3) A representative from the agricultural industry.
- (4) A representative from the trucking industry.
- (5) A representative from county government, who may be a county law enforcement officer.
- (6) A representative from municipal government, who may be a municipal law enforcement officer.
- (7) A representative from the University of North Carolina Highway Safety Research Center.
- (8) A minimum of two staff representatives from the Department.
- (9) Any other expert or stakeholder the Department or working group determines may assist the Department in completing the study required by this act.

The Department shall designate the members listed in subdivisions (1) through (8) of this section, and the working group shall subsequently select a chair and designate the remaining members of the working group authorized under subdivision (9) of this section. In designating additional members, the working group shall ensure that membership composition includes representation of different operator and geographical perspectives.

SECTION 3. Maximum Number of Working Group Members. – The total number of members of the working group convened under Section 2 of this act shall not exceed 12 members.

SECTION 4. Report and Recommendations. – The Department shall report its findings and recommendations, including any legislative proposals, to the Joint Legislative Transportation Oversight Committee on or before December 31, 2015.

Working Group Actions and NCDOT Recommendations

The following is a list of the issues identified by H 232 and the working group, and a summary of the working group and NCDOT recommendations. The working group, representing diverse interests and experiences, was able to form recommendations on many issues. NCDOT agrees with many of those working group actions but also provides alternative recommendations for several of the issues. The meeting minutes provide additional details about working group discussions, including dissenting opinions from the majority of the working group.

(1) How faster-moving vehicles may safely overtake bicycles on roadways where sight distance may be inhibited

- **Working Group Action/NCDOT Recommendation:** The working group passed a motion (with one dissenting vote) for carrying forward draft language regarding passing bicyclists over the double yellow center line. The working group and NCDOT recognizes that motorists need a defense when crossing a double-yellow line in order to overtake a bicycle in otherwise safe conditions. In many cases, reasonableness and officer discretion has kept this from being a major issues from an enforcement perspective. However, motorists trying to pass cyclist(s) while staying in the same travel lane creates a major safety concern. NCDOT recommends that the legislature consider adopting language similar to that created by the H 232 working group:

§ 20-150. Limitations on privilege of overtaking and passing.

(e1) Defense. - It shall be a defense to a violation of sub-section (e) of this section if the operator of a motor vehicle shows all of the following:

- 1) Is overtaking and passing a bicycle or bicycles as defined by 20-171.1 proceeding in the same direction,
 - 2) Is in compliance with subsections (a), (b), (c), and (d) of this section.
 - 3) Provides a minimum of 4' or completely enters the left lane.
 - 4) And the operators of bicycles that will be passed has not provided signal of their intention to perform a left turn.
 - 5) And did not interfere with the bicycle(s) being passed
- **Intent:** This provision would allow motor vehicles opportunities to overtake a bicycle when considered safe to pass on a double yellow line, as included in other conditions of the general statutes. The provision also requires motor vehicle operators to provide a minimum of four feet of separation or entry into the other travel lane in order to pass a cyclist. The key responsibilities are with the operator of the motor vehicle to pass safely. Please note that the no passing zones established by NCDOT consider the size and speed capabilities of motor vehicles. Cyclist(s) are smaller and travel more slowly.

(2) Whether bicyclists on a roadway should be required to ride single file or allowed to ride two or more abreast.

- **Working group Action:** The working group voted unanimously to recommend no change to existing statutes regarding riding abreast, but instead include best practice information about riding abreast in educational materials as referenced in the draft resolution. There was general agreement among the working group that riding two abreast increases bicyclists' visibility and allows for groups to ride in a more compact formation. The working group also discussed how riding abreast affects bicycle operator position and the size of bicycle group rides.

- **NCDOT Recommendation:** NCDOT recommends that the legislature consider adopting language similar to the following:

Bicyclists shall not operate more than two abreast in a single marked travel lane on public roadways except when overtaking another bicyclist. Bicyclists shall not move left, change formation, or otherwise interfere with a vehicle performing a safe pass.

- **Intent:** NCDOT's recommendation allows for cyclists to ride two abreast but also requires that bicyclists cooperate with vehicles performing a safe pass. Allowing groups of bicyclists to ride two abreast improves conspicuity. Limiting to riding two abreast addresses vagueness in the law, limits the width of cycling groups, and directs cyclists to operate in a predictable and compact fashion. This recommendation would not apply to bicycle facilities off the roadway or properly approved bicycle races.

(3) Whether bicyclists should be required to carry a form of identification

- **Working group Action/NCDOT Recommendation:** The working group recommended, by a split vote of 7 for and 2 against, that there be no requirement for cyclists to carry identification. NCDOT concurs with the working group's recommendation.
- **Intent:** The resolution describes identification carry as a best practice for cyclists, as an important aide in the event of a medical emergency or traffic violation. The working group remarked on the complexities of issuing identification documents, and also noted the diversity of cyclists to include children of all ages.

Other Issues discussed by H 232 working group:

(4) Visibility (clothing or other reflective gear) and lighting requirements

- **Working group Action/NCDOT Recommendation:** The working group voted, by a split vote of 6 for and 3 against, to carry forward language that specifies a requirement for either a rear light or clothing/vest that is sufficiently bright and reflective. NCDOT concurs with the working group action and offers the following suggested language:

§ 20-129(e) Lamps on Bicycles.

Every bicycle shall be equipped with a lighted lamp on the front thereof, visible under normal atmospheric conditions from a distance of at least 300 feet in front of such bicycle. Bicycles shall also be equipped with a lamp on the rear, exhibiting a red light visible under like conditions when used at night, or wear clothing or vest that is bright and visible from a distance of at least 300 feet to the rear of the bicycle.

- **Intent:** The resolution provides additional emphasis on rear lighting as a best practice, but the recommendation provides options for enhanced visibility given cost considerations for lighting equipment.

(5) Options for hand signals for turning

- **Working group Action/NCDOT Recommendation:** The working group voted unanimously to carry forward language adding "or right hand" to existing laws to allow cyclists to signal a right turn with their right arm. NCDOT concurs with the working group action and recommends statutory change to add this provision.

- **Intent:** Existing law does not provide cyclists the option to signal a right turn by extending the right arm outward. However, the general public frequently misunderstands the intent of the existing right turn hand signal (left arm extended upward). This provision provides the option to cyclists to more clearly indicate intent to turn right.

(6) 2-foot or other passing distance requirements

- **Working group Action:** The working group did not form a recommendation for additional safe passing requirements as described in statute.
- **NCDOT Recommendation:** NCDOT recommends statutory change to require that motor vehicles overtake bicycle(s) by a minimum four feet of passing distance.
- **Intent:** The recommendation for overtaking/passing a cyclist(s) in limited sight distance conditions states a four foot minimum (or other lane pass). Furthermore, crash data and anecdotal evidence show a significant number of bicycle crashes are due to motorists misjudging sufficient passing distance. Four feet should be the minimum distance for overtaking a cyclist(s) in all conditions, with passing in another lane being the recommended practice. This recommendation is specific only to bicycles and would not apply to other slower moving vehicles.

7) Operating position in roadway

- **Working group Action:** The working group discussed this in context of other issues (such as riding abreast and informal group rides). The working group voted unanimously to recommend no change to existing statutes applicable to bicyclist position on the roadway.

NCDOT Recommendation: NCDOT recommends statutory change to require cyclists, when riding single file or individually along roadways with speed limits posted over 35 miles per hour, ride in the right half (up to the center) of the right-hand vehicle lane where clear and safe to do so. Exceptions should include those listed in § 20-146; or when the cyclist is travelling within 15 miles per hour of the posted speed limit; or to avoid right turn lanes, parked car door swing zones, or other vehicles entering or crossing the roadway. The recommendation does not require cyclists to ride single file under any conditions.

- **Intent:** Existing statutes require all vehicles to ride in the right hand lane or as far to the right as practicable noting some exceptions. It is the common practice of cyclists riding single abreast to ride on the right half of the right most travel lane, except to avoid obstructions in the roadway, prepare for a left turn, or travel at speeds comparable to the posted speed limit. Motor vehicle operators should expect to see cyclists in the left half of the lane when cyclists are avoiding noted safety hazards, and should pass in another lane when safe to do so.

8) Informal group rides on rural roadways

- **Working group Action:** The working group unanimously passed a motion that the report include a draft resolution for the legislature's consideration, directing NCDOT to develop an education and outreach program concerning best practices for groups of cyclists riding on higher speed or rural roadways. The intent of the working group's action is to teach cyclists how to safely minimize or eliminate occasions where large cycling groups may cause significant delay to motor vehicle traffic flow.

- **NCDOT Recommendation:** NCDOT concurred with the working group's action to develop a resolution and a robust education program centered on group riding practices. NCDOT also recommends a statutory change to require that a group of 30 or more cyclists adhere to bicycle race laws and acquire permits as necessary. This recommendation should only apply to a bicycle group starting with and maintaining a compact formation of 30 or more cyclists, when riding for recreational purposes on roadways with speed limits posted over 35 miles per hour. (Note: A group size number of 30 cyclists is deemed to be as starting point for discussion and should be vetted further prior to legislative action.)
- **Intent:** NCDOT believes that a very small number of group bicycle rides have created delay for motorists, and few motorists have been prevented from safely passing groups of cyclists. Delay is influenced by the size of the cycling group, roadway conditions, bicycle operators' training and experience, and the purpose of the bicycle ride. While the number of crashes and injuries associated with group rides are rare; this issue appears to be the one that creates the most angst among motorists and cyclists.

Establishing clearer expectations and informing both motorists and cyclists should help ease the angst. Best practices developed would describe different practices for larger groups of bicyclists to allow for safe passing. This training will consider travel lane width and number, motor vehicle volumes, posted speed limit, group size, and off-road egress.

Existing statutes regarding "bicycle racing" (§ 20-171.2) allow for local or state agencies to provide permits for events where cyclists are exempted from compliance with traffic laws. NCDOT and many local governments have a process for permitting these types of events. Cyclists riding in smaller groups and complying with applicable traffic laws would not be required to secure a bicycle racing permit.

9) Use of headphones or texting while cycling

- **Working group Action/NCDOT Recommendation:** The working group unanimously passed a motion recommending that NCDOT create a program to inform all users of the transportation system about the elements of distracted driving, especially operating a vehicle when the user is using headphones. NCDOT concurs with the working group action.
- **Intent:** The working group and NCDOT discussed how riding without distractions such as cell phones and headphones are safe practices for all vehicles, including bicycles.

10) Aggressive driving, harassment, and distracted driving laws

- **Working group Action/NCDOT Recommendation:** The working group agreed that existing statutes begin to address some of these issues and did not create specific recommendations. NCDOT concurs with the working group action.
- **Intent:** Existing laws provide basic protections for all vehicles against dangerous driving or bicycling behaviors.

11) Vulnerable road user protection

- **Working group Action:** The working group agreed that this issue was not ripe for further discussion at this time and did not form a recommendation.

- ***NCDOT Recommendation:*** "Bicycle operators" should be added to G. S. 20-154 a1, a2 which currently provides additional protections to motorcycle operators involved in a vehicle crash.
- ***Intent:*** Bicyclists are similar in stature to motorcycle operators. Additionally, their size and speed cause them to be more vulnerable to severe injury or fatality when involved in a crash. Bicycles should be afforded the protections extended to motorcycle operators on roadways.

12) Formal group event permitting and regulations

- ***Working group Action/ NCDOT Recommendation:*** The working group voted unanimously to recommend that NCDOT review their permit and management process for road closures for events to reduce the impacts on local residents and businesses. NCDOT concurs with the working group action.
- ***Intent:*** NCDOT should review the permit process to ensure that local and state law officials are aware of statutory obligations to permit access to residents during special events and road closures.

Draft H 232 Resolution

NCDOT and the working group developed a resolution for the General Assembly to consider for adoption. This resolution reaffirms existing laws designed to protect cyclists and best practices for cyclists to follow in order to allow for motor vehicles to safely overtake and travel at reasonable speeds.

Whereas road cycling is a growing sport and mode of transportation;

whereas traffic volumes along roadways in many regions of North Carolina are increasing;

whereas cyclists shall follow traffic laws and not prevent reasonable traffic flow;

whereas law enforcement, emergency responders, and transportation officials aspire to safe and efficient use of public roadways in North Carolina;

whereas, bicycle racing, without official permits and traffic controls, is prohibited by law;

whereas, motorists must consider the speed and position of a cyclist when overtaking and turning in front of a cyclist;

whereas, motorists and cyclists are subject to fines and/or other penalties when travelling at excessive speeds or using aggressive operating behaviors;

whereas, the North Carolina General Assembly passed HB 232 in May 2015 which directed the NCDOT to study the bicycle safety laws of the state and to make recommendations on how the laws may be revised to better ensure the safety of bicyclists and motorists on the roadways;

whereas, the follow-up study required the NCDOT to establish a working group of interested parties knowledgeable and interested in the bicycle safety laws of the State;

whereas, the working group has determined that in addition to statutory revisions there also exist a strong need to enhance statewide education and outreach efforts to help ensure motorists and bicyclists are properly informed on how to safely and most properly interact with each other when using the roadways and to best ensure each other's safety; and

whereas, there are best practices, beyond the general statutes, that should be taught by parents and educators to cyclists and motorists of all ages; therefore be it

Resolved, that state lawmakers and agency officials affirm the following good practices beyond the requirements of the law:

- Cyclists should carry identification on their person while riding
- Cyclists should wear bright and/or reflective clothing and equip their bicycles with high-visibility front and rear lamps, for use in all dim or dark conditions.
- Cyclists should consider traffic speed, travel lane width, traffic volume, and other vehicle traffic when choosing a safe and visible lane position
- Groups of cyclists should ride in a compact fashion, allowing for safe passing
- Motorists should use other lanes to pass cyclists
- Bicycle group ride organizers should consider needs for traffic control, coordination with emergency responders, and necessary permits
- Bicycle group ride organizers should post information about planned and routine group rides on a publicly accessible website; and be it

Further resolved, that the North Carolina General Assembly should appropriate the resources necessary to NCDOT to develop these best practices into education materials, training programs, and outreach to the cycling and motoring public. NCDOT will partner with multiple state and local agencies, including law enforcement, the bicycling industry, and transportation officials to provide this training. This education effort will focus on bicycling behaviors that enhance roadway safety and ensure predictable traffic flow.

Report Appendices

The following contents are included as an appendix to this report. The meeting minutes detail working group votes, actions, and dissenting opinions. Meeting handouts and presentations were produced and distributed by individual working group members. Handouts were shared by members via email or during meetings. These materials are presented in the following order:

Working Group Meeting Agendas and Minutes:

- August 7
- September 11
- October 6
- November 18 (draft minutes)

Meeting Handouts and Presentations

- Vehicle and Bicycle Traffic Laws in North Carolina (handout)
- North Carolina Motorcycle Handbook Selected Pages (handout)
- Evolution of Stay Right Laws (handout)
- Safe Passing Principles and Laws (handout)
- Types of Cyclists (presentation)
- Bicycle Traffic Laws in NC and US (presentation)
- NC Bicycle Crash Facts (presentation)
- Safe Passing and Operating Abreast (presentation)
- Lacy Recommendations for Passing Cyclists (handout)
- Burt Bicycle Issues (handout)
- H 232 Issue Summary (presentation)
- Letter to the H 232 Committee (handout)
- Recommended Regulations for Cycling Abreast (handout)
- Draft Resolution (handout)